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Teik-Chung Tan

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* TEIK-CHUNG TAN and GREGORY WILLIAM SMAUS

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Appeal 2008-004145  
Application 10/729,331  
Technology Center 2100

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Decided:<sup>1</sup> May 26, 2009

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*Before* JOSEPH L. DIXON, JEAN R. HOMERE, and  
THU A. DANG, *Administrative Patent Judges*.

DANG, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

## I. STATEMENT OF THE CASE

Appellants appeal from the Examiner's final rejection of claims 1-27 under 35 U.S.C. § 134(a) (2002). We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

### A. INVENTION

According to Appellants, the invention relates to processing microcoded instructions within an integrated circuit (Spec. 1, para. [0001]).

### B. ILLUSTRATIVE CLAIM

Claim 1 is exemplary and is reproduced below:

1. A microprocessor, comprising:

a microcode ROM, wherein a row in the microcode ROM stores a plurality of groups of microcode operations, wherein a group of the plurality of groups of microcode operations is comprised in a microcode routine, and wherein the row stores an associated control sequence for each of the plurality of groups of microcode operations; and

a control sequence logic unit coupled to the microcode ROM, wherein in response to accessing the group of microcode operations comprised in the microcode routine, the control sequence logic unit is configured to use the control sequence associated with the group of microcode operations to identify an other row storing one or more next groups of microcode operations comprised in the microcode routine.

### C. REJECTIONS

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Tredennick	US 4,338,661	Jul. 6, 1982
Yoshida	US 5,761,470	Jun. 2, 1998

Claims 1-3, 5-10, 12-14, 16-21, 23, 24, and 27 stand rejected under 35 U.S.C. § 102(b) as anticipated by the teachings of Tredennick.

Claims 4, 11, 15, 22, 25, and 26 stand rejected under 35 U.S.C. § 103(a) over the teachings of Tredennick in view of Yoshida.

### II. ISSUE

Have Appellants shown that the Examiner erred in finding that Tredennick teaches a row in a microcode ROM which “stores an associated control sequence for each of the plurality of groups of microcode operations,” wherein “a group” of microcode operations is “comprised in a microcode routine” and a control sequence logic unit “is configured to use the control sequence associated with the group of microcode operations to identify an other row storing one or more next groups of microcode operations comprised in the microcode routine”(claim 1)?

### III. FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

*Tredennick*

1. Tredennick discloses a control store containing a plurality of microinstruction routines (col. 1, ll. 53-57).
2. Micro control store selects a microword, which contains information that determines the source of the microinstruction address to be selected and provides the address of the next micro instruction (col. 5, ll. 42-50; Figs. 2 and 8).
3. Two microwords which serve as alternate destinations for a particular conditional branch type microword must be placed in the same logical row of the micro ROM (col. 17, ll. 29-35; Appendix A).
4. In a micro control store in the micro ROM, the microwords are located in a plurality of columns and a plurality of rows (Figs. 10A-D), wherein each microword label is shown at a particular address within the store (col. 19, ll. 35-41; Appendix A).

IV. PRINCIPLES OF LAW

*35 U.S.C. § 102*

In rejecting claims under 35 U.S.C. § 102, “[a] single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation.” *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375 (Fed. Cir. 2005) (citation omitted). “Anticipation of a patent claim requires a finding that the claim at issue ‘reads on’ a prior art reference.” *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1346 (Fed Cir. 1999) (international citations omitted). “In other words, if granting patent protection on the disputed claim would allow the patentee to exclude the public from practicing the prior art, then that claim is

anticipated, regardless of whether it also covers subject matter not in the prior art.” *Id.* (citations omitted).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros, Inc.. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) (citations omitted).

## V. ANALYSIS

### *35 U.S.C. § 102(b)*

Tredennick discloses a micro control store within a microcode ROM (FF 3) which stores a plurality of microinstruction routines (FF 1), wherein each microinstruction routine comprises a plurality of microwords (FF 2) and each row of the microcode ROM stores a plurality of microwords (FF 4). The plurality of microwords in each row may be comprise a group serving as alternate destinations in the same microinstruction routine (FF 3), and each microword in the row stores information to identify the next microinstruction (FF 2).

We find an artisan would have understood the microwords in stored in the microcode ROM of Tredennick to be “a plurality of groups of microcode operations, wherein a group of the plurality of groups of microcode operations is comprised in a microcode routine” (claim 1). Similarly, the artisan would have understood the information in the microwords used to identify the next microinstruction to “identify another row storing one or more next groups of microcode operations” (*id.*).

Appellants contend that Tredennick does not teach or disclose “a row storing an associated control sequence for each of the plurality of groups of

microcode operations stored in the row” (App. Br. 11), and that “[n]one of these descriptions includes a control sequence identifying another row storing one or more next groups of microcode operations comprised in the (same) microcode routine.” (App. Br. 12.)

In response, the Examiner finds that, in Tredennick, “the row ’00 0100 11’ contains two groups, each containing two instructions, swap and tasm (each two part instructions)” (Ans. 16), and that “every address specifies a row” and “[t]herefore, every control sequence in Tredennick teaches a row where the next instruction (which is in a group, thus specifies a group) resides.” (Ans. 17.)

Accordingly, an issue we address on appeal is whether Tredennick teaches a row in a microcode ROM which “stores an associated control sequence for each of the plurality of groups of microcode operations,” wherein “a group” of microcode operations is “comprised in a microcode routine” and a control sequence logic unit “is configured to use the control sequence associated with the group of microcode operations to identify an other row storing one or more next groups of microcode operations comprised in the microcode routine” (claim 1). In particular, the issue turns on whether the Tredennick teaches a control sequence “associated with the group” of “microcode operations comprised in the microcode routine” that is used to identify an other row storing the next groups of microcode operations “comprised in the microcode routine” (*id.*).

After reviewing the record on appeal, we agree with Appellants. Although the Examiner finds that each row of the microcode ROM in Tredennick stores a plurality of groups of microwords (Ans. 16), and each row may be comprised of a group of microwords in the same

microinstruction routine (FF 3), we find that each row of Tredennick does not contain a control sequence “associated with the group” (claim 1). In particular, though the Examiner finds that “control sequence” reads on the information in the microword which indicates where the next instruction resides (Ans. 17), in Tredennick, each individual microword stores the information for the next microinstruction (FF 2), but there is no control sequence associated with the group of microcode operations comprised in the microcode routine. Thus, the information stored in the individual microword is not a control sequence “associated with the group” of microcode operations “comprised in the microcode routine,” as required by claim 1.

Further, though the Examiner finds that, in Tredennick, the microword contains an address of the next microinstruction, and that each address specifies a row, and thus specifies where the next microinstruction resides (Ans. 17), the specified next group address is not for the next groups of microcode operations comprised in the microcode routine, as required by claim 1. That is a control sequence “associated with the group” in the microcode routine is not used to identify another row storing the next groups of microcode operations “comprised in the microcode routine” as required by claim 1.

As such, we will reverse the rejection of representative claim 1 and claims 2, 3, 5-10, 12-14, 16-21, 23, 24, and 27 standing therewith over Tredennick. We thus conclude that Appellant has shown that the Examiner erred in rejecting claims 1- 3, 5-10, 12-14, 16-21, 23, 24, and 27 under 35 U.S.C. § 102(b) for the reasons as set forth above.



*35 U.S.C. § 103(a)*

Claims 4, 11, 15, 22, 25 and 26 depend from claims 1, 12, and 23 respectively. As discussed *supra* regarding claim 1 and claims 12 and 23 standing therewith, although we find that Tredennick discloses microcode operations in a microcode routine, there is no control sequence associated with the group of microcode operations comprised in the microcode routine, as required by claim 1. Similarly, though we agree with the Examiner that Tredennick discloses identifying the next group of microcode operations, the control sequence “associated with the group” in the microcode routine is not used to identify another row storing the next groups of microcode operations “comprised in the microcode routine,” as required by claim 1.

We also find that Yoshida does not cure this deficiency of Tredennick. We thus conclude that Appellants have shown that the Examiner erred in rejecting claims 4, 11, 15, 22, 25 and 26 under 35 U.S.C. § 103(a) for the reasons as set forth above.

## VII. CONCLUSIONS OF LAW

Appellants have shown that the Examiner erred in finding claims 1-3, 5-10, 12-14, 16-21, 23, 24, and 27 anticipated by Tredennick 35 U.S.C. § 102(b) and claims 4, 11, 15, 22, 25, and 26 unpatentable over the teachings of Tredennick in view of Yoshida under 35 U.S.C. § 103(a).

## VIII. DECISION

We have not sustained the Examiner's rejection with respect to any claim on appeal. Therefore, the Examiner's decision rejecting claims 1-27 is reversed.

Appeal 2008-004145  
Application 10/729,331

REVERSED

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